8. USSN 60/094,952 "Compositions and Methods for Treatment of Cancer" filed 31 July 1998.
9. USSN 60/033,172 "Superantigen-Based Methods and Compositions for Treatment of Cancer," filed 17 December1996.
10. USSN 60/044,074 "Superantigen-Based Methods and Compositions for Treatment of Cancer," filed 17 April 1997.
11. USSN 09/061,334 "Tumor Cells with Increased Immunogenicity and Uses Thereof," filed 17 April 1998.
11. USSN 09/311,581 "Compositions and Methods for Treating Neoplastic Disease," filed 14May 1999.
12. USSN 60/173,371 "Compositions and Methods for Treating Neoplastic Disease," filed 28 December 1999
13. USSN 05/208,128 "Compositions and Methods for Treating Neoplastic Disease," filed 31 May 2000
14. USSN 09/650,884 "Compositions and Methods for Treating Neoplastic Disease," filed 28 December 2000

Moreover, all references cited herein are incorporated by reference, whether specifically incorporated or not.

Having now fully described this invention, it will be appreciated by those skilled in the art that the same can be performed within a wide range of equivalent parameters, concentrations, and conditions without departing from the spirit and scope of the invention and without undue experimentation.

While this invention has been described in connection with specific embodiments thereof, it will be understood that it is capable of further modifications. This application is intended to cover any variations, uses, or adaptations of the invention following, in general, the principles of the invention and including such departures from the present disclosure as come within known or customary practice within the art to which the invention pertains and as may be applied to the essential features hereinbefore set forth as follows in the scope of the appended claims.

WHAT IS CLAIMED IS:

1. A mammalian cell receptor useful in the treatment of cancer which binds tumor associated lipids wherein said binding induces anergy or apoptosis in said T cells and antigen presenting cells.

2. The tumor associated lipids of claim 1 which are selected from a group consisting of fatty acids, ceramides, glycolipids, sphingolipids, glycosphingolipids, phosphosphingolipids, gangliosides, sialylated glycans, lipopeptides and proteoglycolipids.

3. The mammalian cells of claims 1 and 2 which are selected from a group consisting of T cells, NKT cells, antigen presenting cells, dendritic cells, fibroblasts, macrophages.

4. The cells of claim 1 and 3 which have a conserved sequence tyrosine-based inhibitory motif sequence in their cytoplasmic tails

5. A mammalian cell useful in the treatment of cancer in a mammal wherein the receptor which binds tumor associated lipids and induces cellular inactivation or death is deleted or functionally deactivated.

6. The cells of claim 5 which are selected from a group consisting of T cells, NKT cells, antigen presenting cells, dendritic cells, fibroblasts, macrophages

7. A method for producing a tumoricidal immunocyte population in vivo in a mammal said method comprising allowing tumor associated lipids to contact immunocytes in which receptors for immunosuppressive fatty acids, ceramides, glycolipids, sphingolipids, glycosphingolipids, phosphosphingolipids, gangliosides, sialylated glycans, lipopeptides and proteoglycolipids. are inactivated or deleted.

8. A method for producing a tumoricical immunocyte population ex vivo in a mammal, said method comprising:

a) allowing tumor associated lipids to contact immunocytes in which receptors for said lipids are inactivated or deleted to produce a tumoricidal immunocyte population.

b) administering said tumoricidally activated immunocytes to the host.

9. A method for producing a tumoricical antigen presenting cell population ex vivo in a mammal, said method comprising:

a) allowing a tumor associated lipid to contact antigen presenting cells in which receptors for said tumor associated lipids are inactivated or deleted to produce a tumoricidally activated population.

b) administering said antigen presenting cells to the host.

10. A method for producing a tumoricical T cell population ex vivo in a mammal, said method comprising:

a) allowing a tumor associated lipids to contact T cells in which adaptor proteins which inhibit T cell activation by tumor associated antigens are deleted or functionally deactivated to produce a tumoricidal population of T cells.

b) administering said tumoricidally activated T cells to the host.

11. A method of treating cancer in a mammal by administration of a lipid binding molecule which binds immunosuppressive tumor associated lipids in vivo.

12. A method of treating cancer in a mammal wherein the lipid binding molecules are administered to the host 1-4 hours before the administration of tumoricidally activated cells of claims 5 and 6.

13. The lipid binding protein of claim 11 which is selected from a group consisting of sialic acic binding lectin (Siglecs), prosaposin, saposins and glycolipid transfer protein (GLTP).

14. A construct useful in the treatment of cancer comprising a superantigen nucleotide inserted into a virus.

15. The virus claim 14 wherein said virus contains a tissue specific promoter

16. The virus of claim 15 wherein the tissue specific promoter is selected from a group consisting of prostate specific promoter, albumin specific promoter, myeloma immunogloulin specific promoter, alpha fetoprotein promoter.

17. The virus of claim 14 wherein said virus is deleted of a tumor suppressor inactivating gene.

18. The virus of claim 17 wherein said tumor specific promoter is an adenoviral mutant (dl1150) which lacks expression of the E1B-55-kDA protein.

19. The virus of claim 14 wherein the virus encodes an immunogenic cell surface protein

20. The virus of claim 19 wherein the cell surface protein is HSV-E6 or E7.

21. The virus of claim 14 wherein said virus contains a prodrug enzyme.

22. The virus of claim 21 wherein said virus contains a herpes simplex virus thymidine kinase gene

23. The virus of claim 14 wherein said virus contains a self replicating RNA sequence.

24. The virus of claim 23 wherein said virus is an Alphavirus producing tumor encoding tumor specific antigens, superantigens and lipid binding agents.

25. A mammalian T cell useful in the treatment of cancer wherein an adaptor protein which inhibits T cell activation by tumor associated antigens is deleted or functionally deactivated.

26. A method for producing a tumoricidal T cell population in vivo in a mammal said method comprising allowing a tumor associated antigen and to contact immunocytes in which adaptor proteins which inhibit T cell activation by tumor associated antigens are deleted or functionally deactivated.

27. A composition useful in the treatment of cancer comprising a lipid raft conjugated to a superantigen.

28. The composition of claim 27 wherein said lipid raft comprises signal transduction molecules, G proteins, cell surface receptors, tumor associated antigens.

29. A method for producing a tumoricical T cell population ex vivo in a mammal, said method comprising: said method comprising allowing a superantigen-lipid raft conjugate to contact immunocytes in vivo

30. A method for producing a tumoricical T cell population ex vivo in a mammal, said method comprising:

a) allowing a superantigen-lipid raft to contact T cells ex vivo

b) administering said tumoricidally activated T cells to the host.

ABSTRACT

The present invention comprises compositions and methods for treating a tumor or neoplastic disease in a host, The methods employ conjugates comprising superantigen polypeptides, nucleic acids with other structures that preferentially bind to tumor cells and are capable of inducing apoptosis. Also provided are superantigen-glycolipid conjugates and vesicles that are loaded onto antigen presenting cells to activate both T cells and NKT cells. Cell-based vaccines comprise tumor cells engineered to express a superantigen along with glycolipids products which, when expressed, render the cells capable of eliciting an effective anti-tumor immune response in a